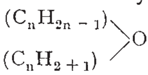
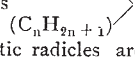
large number of important works on the special branch of zoology to which it relates.

IN our fifth note, on November 27, p. 87, *for* Friana *read* Triana.

AN important paper is contributed by MM. Barbier and Roux to the current number of the *Bulletin de la Société Chimique*, in which are described the final results of an elaborate experimental investigation concerning the relations between the optical dispersive power of the alcohols, ethers, and fatty acids, and their molecular weight and constitution. The relations brought to light, as might perhaps have been expected, are of the most regularly systematic character, and capable of expression in a few simple generalizations. The experimental portion of the work consisted in determinations of the refractive indices of the liquid in question at known temperatures, and for two widely separated lines of the spectrum of wave-lengths λ_a and λ_b. A measure of the dispersive power is then afforded by the amount of the difference between the values of the two indices thus obtained. It has also been shown that if the well-known expression of Cauchy, $n = A + \frac{B}{\lambda^2} + \ldots$, for the refractive index n be adopted, and for all practical purposes the expression appears to be sufficiently approximate, the constant B is a true measure of the dispersion. This value B is termed by MM. Barbier and Roux the dispersive power. In order, however, to eliminate differences due to the unavoidable differences of temperature at which the various determinations are made, the conventional expression $\frac{B}{d}$, where d represents the density of the liquid at the temperature of observation, is employed in the comparisons, and is called the specific dispersive power. The value of B is readily calculated from the two determinations of refractive index by means of the formula—

$$B = \frac{n_a - n_b}{\frac{1}{\lambda_a^2} - \frac{1}{\lambda_b^2}}$$

The general conclusion arrived at from the experiments upon the alcohols is that "the dispersive powers are continuous functions of the molecular weight, and they increase with increasing molecular weight in the fatty series, and decrease with ascending molecular weight in the aromatic series." Similarly as the result of the investigation of the ethers, it was found that "the value of the dispersive power augments with the molecular condensation." It was further remarked that "the values of the dispersive powers of isomeric ethers are practically identical." In illustration of this latter point, which appears to show that the dispersion practically depends alone upon the molecular weight of the substance, it may be noted that ordinary ether, ethyl oxide, and the isomeric mixed ether, methyl propyl oxide, both possess the same dispersive power, as do also propyl ether, ethyl isobutyl ether, and methyl isoamyl ether. It was also curiously observed that in the mixed ethers of the series  $\left.\begin{array}{l}(C_nH_{2n-1})\\(C_nH_{2+1})\end{array}\right\rangle O$, in which the unsaturated allyl radicals occur, the specific dispersive power is approximately the same for all the members of the series, while or the mixed ethers of the series  $\left.\begin{array}{l}(C_nH_{2n-7})\\(C_nH_{2n+1})\end{array}\right\rangle O$, in which the still further unsaturated aromatic radicles are introduced, the value actually diminishes as the molecular weight increases. The very important conclusion was also arrived at that the specific molecular dispersive power $\frac{B}{d}M$, where M represents molecular weight, of a compound is equal to the algebraic sum of the specific molecular dispersive powers of its constituents. Precisely analogous results were obtained from the experiments upon the liquid fatty acids, confirming the main generalization that dispersion is a true function of the molecular weight.

THE additions to the Zoological Society's Gardens during the past week include a Barbary Ape (*Macacus inuus* ♂) from North Africa, presented by Madame Ruoy; a White-fronted Capuchin (*Cebus albifrons* ♂) from South America, presented by Mrs. Akers-Douglas; a Pinche Monkey (*Midis œdipus* ♀) from New Granada, presented by Mr. J. Barry O'Callighan; a Himalayan Bear (*Ursus tibetanus* ♀) from Beloochistan, presented by Mr. B. T. Ffinch, C.M.Z.S.; a Common Raccoon (*Procyon lotor*) from North America, presented by Mr. C. E. Brewerton; a Greater White-crested Cockatoo (*Cacatua cristata*) from Moluccas, presented by Mr. C. J. Cassirer; a Blue and Yellow Macaw (*Ara ararauna*) from Brazil, presented by Mr. A. Cohen; a Pennant's Parrakeet (*Platycercus pennanti*) from Australia, presented by Mrs. Moon; a Water Rail (*Rallus aquaticus*), British, presented by Mr. T. E. Gunn; two Alligators (*Alligator mississippiensis*) from Florida, presented by Mr. Henry Birkbeck; two —— Snakes (*Pituophis melanoleucus*) from New Jersey, U.S.A., presented by Mr. Morton Middleton; two Snow Buntings (*Plectophanes nivalis*), European, purchased; a Vulpine Phalanger (*Phalangista vulpina*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE PHOTOGRAPHY OF SOLAR PROMINENCES.—Mr. G. E. Hale, of Kenwood Physical Observatory, Chicago, describes in *Astronomische Nachrichten*, No. 3006, the results of some attempts made last winter to photograph solar prominences. One of the methods employed is to alter the rate of the driving clock of the equatorial, so that a prominence may move slowly across the slit of a spectroscope adjusted radially on the sun's image. A prominence line, say C, is brought into the centre of the field of the observing spectroscope, and at the same time falls upon a photographic plate having a motion such that the radius of curvature of the sun's limb upon it is the same as that of the focus of the equatorial.

A second method proposed is to use a stationary solar image and photographic plate, with two slits in uniform motion—one the radial slit of a spectroscope, the other a slit moving directly in front of the plate.

The plates have been stained with cyanin, alizarin, and erythrosin for the photography of the prominence lines C and D_3, utilized in the experiments. The work is to be resumed shortly with a rotating cylinder, having upon its circumference a strip of dyed celluloid film moving across the focus of the observing telescope, instead of the plates previously used. If this be done, and a uniform motion given by a good clock or clepsydra, some definite results may be expected.

THE FREQUENCY OF METEORS.—MM. Terby and Van Lint made some observations of the relative frequency of meteors on August 9 and 10, 1890 (*Bulletin de l'Académie Royal des Sciences, Brussels*, No. 9, 1890). An inspection of the observations tabulated shows that before midnight an observer whose field of view embraced one fifth of the horizon, saw from three to five meteors in fifteen minutes. This number was increased after midnight, however, so that an observer, viewing one-sixth of the sky, saw from five to six meteors in the same interval. On August 10 a maximum appeared to be reached between 12h. 30m. and 13h. 11m., the average in that interval being one in two minutes. Only two meteors were observed whose brilliancy was comparable with that of Jupiter. The trains were few, and of short duration.

THE ANNIVERSARY OF THE ROYAL SOCIETY.[1]

THE proceedings of every anniversary meeting remind us of the losses which the Society has sustained during the preceding year by the deaths of several of its Fellows. Of those whom we have lost during the past year, some were distinguished for their scientific labours, some were well known in the world at large. Of several, full obituary notices have appeared or will appear in the Proceedings, but it will, I think, be in accordance with the wishes of the Fellows that I should say a few words on the present occasion about some of those whom we have lost.

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[1] Presidential address delivered by Sir George Stokes at the anniversary meeting, December 1.

The Rev. Stephen J. Perry, S. J., whose name is well-known in connexion with his accurate magnetic observations, and his labours in the domain of solar physics, was last year elected a member of the Council. It was known that he could not attend the first meeting, for he would be on his way to the West Indies to observe the total solar eclipse of the 22nd of December, but we looked forward to having him at the meetings of our Council after that was over. In this we were doomed to disappointment, for a telegram which arrived shortly after the day of the eclipse brought the sad intelligence of his death. His illness began shortly before the day of the eclipse, but he did not suffer it to interrupt his preparations, but worked on to the end as far as his failing strength would allow. The observation of total solar eclipses was a branch of solar physics to which he had paid special attention, and, considering the circumstances of his death, we may regard him as a martyr to science, while at the same time his kindly disposition ensured attachment from all who knew him.

William Lewis Ferdinand Fischer, who was a friend of mine for more than forty years, was a German by birth, and was educated in that country. He came to Cambridge later in life than most men commence residence, entering at my own college, Pembroke. At the time when he entered he was only imperfectly acquainted with the English language. He took his degree in due course, having come out fourth wrangler. He obtained a fellowship at Clare College, and, after some time, was elected Professor of Natural Philosophy in the University of St. Andrews, at which town he continued to reside till his death, and his widow still resides. He was remarkably well acquainted with what had been done in physical science.

In the middle of January we lost, in Lord Napier of Magdala, a man of world-wide reputation, who had been a Fellow of the Society for more than twenty-three years. A sketch of his life has already appeared in the Proceedings.

The eminent physician Sir William Gull, who for some considerable time had been in failing health, was taken from us at the beginning of this year. The Fellows have already in their hands a sketch of his life.

In February there died, at an advanced age, our Fellow Sir Robert Kane, who was eminent among what we may regard as the last generation of chemists. A biographical notice of him is already in the hands of the Fellows.

Robert William Mylne, who died in July, was twelfth in direct descent of a family of architects and engineers, his direct ancestor having had the erection of new buildings for Holyrood Palace in the reign of Charles the Second. He had still in his possession the correspondence relating to that work. His own work lay chiefly in hydraulic engineering and the geology of the south-east of England, especially the London area, and in advising respecting the construction of new buildings in the City.

General Sir John Henry Lefroy, who died last April, combined the duties of his profession and of his responsible offices as Governor of Bermuda, and, for a time, of Tasmania, with active scientific work in relation especially to terrestrial magnetism, with which he was connected by his post as director of magnetic observations at St. Helena and at Toronto. He is the author of a treatise on the subject, and has entered into some investigations bearing on a possible cause of local magnetic irregularities, which seem well deserving of consideration.

Sir Warington Wilkinson Smyth, who was so high an authority on all that relates to mining, and geology as bearing upon it, was one of our Fellows who repeatedly served on our Council and on various committees, and by his sound judgment aided us in our deliberations. Though his health had been failing for some time, his end came upon us with startling suddenness. It will be remembered by many of the Fellows that he was present at our *conversazione* on 18 June, and next morning he breathed his last. He was widely known as a man of science, and was honorary Fellow of various societies on the Continent. In him I have lost one who was formerly a colleague of my own as lecturer in the School of Mines.

William Kitchen Parker held a very high place among biologists in relation especially to the homologies of the vertebrate skeleton. Notwithstanding the laborious nature of his profession, he managed to find time for his scientific pursuits, and our Transactions contain a large number of papers which came from his pen, and are illustrated by elaborate drawings. So highly were his biological researches thought of, that for several years means were found, through an application of a portion of the Government Grant, for enabling him to dispense with the laborious work of his profession, and devote himself to science. His genial disposition and vivacity of manner, and, curiously enough, his personal appearance, reminded one of Faraday.

Dr. James Matthews Duncan, who died suddenly from heart disease, was eminent as an obstetric physician, and was a man of singular straightforwardness of character.

Our Fellow Charles Handfield Jones died on September 30. His chief scientific labours lay in the domain of pathological anatomy.

Alexander John Ellis, who died on October 28, devoted great attention to philology and to the theory of the perfection of musical sounds, and translated v. Helmholtz's work, "Tonempfindungen." He had, shortly before his death, received an honorary doctor's degree from the University of Cambridge.

During the last year we have lost two out of our three senior Fellows, Christopher Rice Mansel Talbot, a Fellow also of the Linnæan Society, who was elected our Fellow in 1831, and, still more recently, in fact only a few days ago, Sir John Francis Davis, who was elected as long ago as 1822, and died at the very advanced age of ninety-six.

The number of Fellows elected before 1847 is now reduced to eighteen, so that in any statistical calculations of the effect of the statutes of 1847 on the number of Fellows, the present condition of the Society may be taken as practically normal.

The Committee appointed in 1888 to consider the best mode of administrating the fund, which was inaugurated in 1882, for founding a memorial to our late eminent Fellow, Charles Darwin, have now presented their report, which has been adopted by the Council. It has been decided that the proceeds of the Darwin Fund be for the present applied biennially in reward of work of acknowledged distinction (especially in biology) in the field in which Mr. Darwin himself laboured; that the award consist of a medal in silver or bronze, accompanied by a grant of £100; that it be made either to a British subject or to a foreigner, and without distinction of sex; and that the award should be conferred at the same time as other medals at the anniversary.

It was further intended, in accordance with Mr. Darwin's known views, that, as a rule, the award should be made rather for the work of younger men in the early part of their career than as a reward to men whose scientific career is nearly finished.

The Committee appointed at a meeting of the Council held immediately before the last anniversary meeting of the Society, to set on foot a memorial of our late Fellow James Prescott Joule, have naturally not got quite so far in their work. They decided that the memorial should take an international character, and should have for its object the encouragement of research in physical science, and should also have in view the erection of some personal memorial in London. The subject was accordingly brought to the notice of a number of scientific men abroad, from many of whom favourable replies have been received. The Joule Committee have resolved, "That the balance of the fund, after providing a suitable personal memorial, be transferred to the President, Council, and Fellows of the Royal Society, and that the President and Council be requested to undertake the administration of the proceeds in such manner as may appear to them most suitable for the encouragement of research, both in England and abroad, especially among younger men, in those branches of physical science more immediately connected with Joule's work;" and, also, "That the treasurer be instructed to retain for the present a sum not exceeding £300 for the expenses of the medallion, and hand over the balance to the President, Council, and Fellows of the Royal Society."

This offer of the Joule Committee was accepted with thanks by the Council, but the further consideration of the steps to be taken has not yet been entered on. Meanwhile the treasurer of the fund has handed over to the treasurer of the Royal Society a sum of about £1,400.

In 1663, when the second charter was granted to the Society, a body of statutes was drawn up for regulating various matters not fixed by charter. Alterations have since been made from time to time, as provided for in the statutes themselves. The last considerable alteration was made in 1847, when the present system was introduced, according to which the Council select from the candidates, other than those who have a special privilege as to coming on for ballot, a definite number whom they recommend to the Society for election, and the election takes place on one definite day in the year. A few changes, of less importance, have been made since that time, and experience has pointed out the desirability of some changes of detail, chiefly as regards the mode of dealing with papers. A committee was appointed last session, and continued at the commencement of the present, to revise the whole body of statutes, with a view to bring them into stricter conformity with existing practice, and at the same time to propose further changes, should any such appear desirable. The Committee have now reported; but as the session was near its end, and the subject was one requiring full consideration by the Council, the report has been merely received and entered on the minutes, and it has been left to the Council that is to be elected to-day to take such further steps as may appear to them desirable.

Some of the proposed alterations relate to the mode of dealing with papers which are communicated to the Society, which is a matter of practical business that may well be left to the judgment and experience of the executive body. But some points have been raised which it seems desirable to bring to the notice of the Fellows at large, in order that they may have an opportunity of considering them before a final decision is come to by the new Council.

The question has more than once been raised whether, considering the increase of population and the more general diffusion of scientific knowledge which has taken place within the last forty years, the number of candidates to be selected by the Council for recommendation to the Fellows for election might not now, with advantage, be made a little larger than fifteen, the number at which it was fixed in 1847. On this question there was considerable difference of opinion in the Committee, but the majority were in favour of keeping the number as it is at present.

Connected, to a slight extent, with this question is another, whether the Council should not have the power of recommending to the Fellows for election, in addition to the fifteen selected from among the candidates on the ground of scientific merit, a strictly limited number of men of very high eminence in other ways. The Committee recommend that such a power be entrusted to the Council, the number of Fellows who have been thus elected, existing at any time, being limited to a maximum of twenty-five, and the number elected in any year to a maximum of two.

The question was also discussed whether the maximum number of foreign members, which at present stands at fifty, should be increased, and was decided in the negative.

Another recommendation of the Committee which perhaps it may be as well to mention, is one enabling the Council, in any year, to regulate for the ensuing year the length of the Christmas and Easter holidays. At present the weekly meetings are resumed in the second week after Christmas week, and there is then no intermission till Passion week, though the earlier portion at least of this interval is a time during which papers intended for reading do not usually come in so frequently as towards the end of the session. According to the statute in force till 1888, three of the ordinary weekly meetings between Whit-Sunday and the last meeting in June, were cut out by the Whitsun holiday, Ascension Day, and the annual election of Fellows; and as at that time of year papers commonly come in pretty frequently, there was a considerable congestion of papers towards the close of the session. This congestion was partially relieved by an alteration of the statutes, which came into force in 1888, enacting that an ordinary meeting should be held at the conclusion of the Annual Meeting for the election of Fellows; but the fact that the proportion between the number of meetings held and the number of papers that come in varies a good deal with the season, seems to render it desirable that the regulation of the number of meetings should be rather more elastic, and should to some extent be left in the hands of the Council.

Since the last anniversary twenty-five memoirs have been published in the Philosophical Transactions, containing a total of 1068 pages and 72 plates. Of the Proceedings, eleven numbers have been issued, containing 1165 pages.

In the library, the work of making room for growing series, and of obtaining volumes or parts to complete series that were imperfect, has been continued. In the course of this work the Council have, upon the recommendation of the Library Committee, distributed some 1500 volumes, consisting partly of duplicates and partly of works of small scientific value, among various public institutions. The catalogue of the manuscripts, which I mentioned in my last year's address, as about to be commenced, has been completed during the past session. The maps and charts, the pictures and busts, have also been catalogued, and the collection of the manuscripts of memoirs in the Philosophical Transactions, the Proceedings, and the Archives, having been completed, the binding of them is now going forward.

With a view to increasing the circulation of the Society's publications on the Continent of Europe, Messrs. Friedländer and Son, of Berlin, have lately been appointed additional agents for their sale.

The Royal Society has always been ready to assist the Government of the day when requested so to do, by expressing its opinions or offering its advice on questions involving special scientific knowledge. Last year I received, as your President, a request from the President of the Board of Trade that I should, in conjunction with two Fellows of the Royal Society nominated by me in consultation with the Council, examine a report in two parts presented by the Corporation of the Trinity House to the Board of Trade, relative to lighthouse illuminants, and express our opinion whether the conclusions of the Trinity House, as set forth in their Reports, are justified by the records of the experiments contained therein. Lord Rayleigh and Sir William Thomson were asked, and consented to join me as referees, and our Report was some time ago sent in to the Board of Trade.

Another subject in which scientific principles are blended with practical application, is that of colour blindness in its relation to the correct perception of coloured signals used at sea and in the railway service. It is easy to understand what serious accidents might be occasioned, for instance, by confusing red with green; and so well is the liability to such confusion, arising from a not very rare abnormal condition of colour perception, understood at the present day, that persons who propose to engage in service at sea or on the railways are now, as a matter of course, examined as to their perception of colour. But, glaring as the difference between red and green appears to persons whose vision is normal, the detection of those who are liable to confound them, and who, for the most part, are quite unconscious that they see colours differently from people in general, is by no means so easy as it might appear at first sight; and there appeared reason to think that sometimes the tests applied are defective, and let pass persons who are afflicted with this peculiarity of vision, while, on the other hand, they may lead to rejection of persons whose vision is normal, perhaps, after they have engaged in their course for life in an employment for which normal vision is demanded. Mr. R. Brudenell Carter wrote a letter to us suggesting that we should appoint a committee to investigate the subject of colour blindness, and after discussion of this proposal I was requested to write a letter to the President of the Board of Trade informing him that, should the Government desire it, the Council will be prepared to appoint a committee to consider the whole question of colour blindness. A reply was received from the Board thanking us for the communication, and saying that they regarded with satisfaction the proposal of the Council to appoint such a committee. A committee has accordingly been appointed, and has held several meetings, and examined several witnesses; but the subject is a wide one, and the committee have not yet brought their labours to a close.

The proceedings of to-day bring to an end my long tenure of office in the Royal Society, which has extended now over thirty-six years, during the last five of which I have held the honourable office of your President. I am deeply sensible of the kindness which I have always experienced from the Fellows, and of the indulgence with which they have overlooked my deficiencies, due, in part, to the pressure of other work. It cannot be without a strong feeling of regret that I come to the close of an official connection with the Society that has now extended over full half my life. But I feel that it is time that I should make way for others, and that I should not wait for those infirmities which advancing years so often bring in their train; besides which, there are personal reasons which led me to request the members of the Council not to vote for my nomination for re-election as your President.

And now it only remains to me, as virtually my last official act as your President, to perform the pleasing duty of delivering the medals which the Society has to award to the respective recipients of those honours.

The Copley Medal has been awarded to our Foreign Member, Prof. Simon Newcomb, who has been engaged during the last thirty years in a series of important researches, which have contributed greatly to the progress of gravitational astronomy. Among his labours in this field may be mentioned his able discussion of the mutual relations of the orbits of the asteroids, with reference to Olbers' hypothesis, that they were formed by the breaking up of a ring of nebulous matter, his discussion of the orbits of Uranus and Neptune, and of the orbit of the moon. Recently he has turned his attention to Saturn's satellites, and has investigated the remarkable action of Titan on Hyperion. For many years back he has chiefly been engaged in perfecting the tables of the moon; and in his important work, "Researches on the Motion of the Moon," he has discussed observations of eclipses and occultations previous to 1750, with the important practical result that, by the removal of an empirical term of long period from Hansen's lunar tables, and by an empirical alteration of another term of long period, he is enabled to represent satisfactorily the observations of the moon from 1625 to the present time; and by thus indicating empirically the long period inequality required to represent the moon's motion, he has prepared the way for its theoretical investigation.

The Rumford Medal has been awarded to Prof. H. Hertz for his work on electro-magnetic radiation.

One of the most remarkable achievements of the late Prof. Clerk Maxwell was his electro-magnetic theory of light, in which it was shown that a certain velocity, determinable numerically by purely electrical experiments, and expressing theoretically the velocity of propagation of an electro-magnetic disturbance, agreed within the limits of error of experiment with the known velocity of propagation of light; and accordingly that we have strong reason for believing that light is an electro-magnetic phenomenon, whatever the appropriate physical idea may hereafter prove to be which we ought to attach to the propagation of an electro-magnetic disturbance. But as yet no means existed by which phenomena, such as those of interference, which are bound up with the propagation of undulations, could be exhibited by purely electrical means. Prof. Hertz was the first to detect electro-magnetic waves in free space by his invention of a suitable receiver, consisting of a resonating circuit, which gives visible sparks when immersed in a region of sufficiently intense electric radiation.

By reflection, refraction, and interference experiments, he has further verified the undulatory nature of the disturbance near a quick electric oscillator, such as had been suggested by Prof. Fitzgerald, on the basis of Clerk Maxwell's electro-magnetic theory of light, and Sir W. Thomson's theory of the oscillatory character of a Leyden jar discharge.

These important researches contribute powerfully to the inducements we have to refer the phenomena of light and electricity to a common cause, different as hitherto their manifestations have been; and by this means the theory of each may be advanced through what we know of the other.

One of the Royal medals has been awarded to our Fellow, Dr. David Ferrier, for his researches on the localization of cerebral functions.

We owe to his experiments, and the method of experimenting upon monkeys which he introduced, almost the whole of our knowledge of cerebral localization in man. From pathological observations, Broca located the centre for speech in the third left frontal convolution, but with this exception nothing was known of cerebral localization in man until Dr. Ferrier commenced his experiments in 1873.

Fritsch and Hitzig, in 1870, had observed that definite movements could be obtained by electrical irritation of the cerebral cortex in the dog, and this indicated the existence of localized motor areas in the brain. They did nothing, however, towards localizing sensory centres, and even in regard to the motor centres their observations were very limited. Their observations attracted hardly any attention; they had neither followed them up themselves, nor had any one else taken them up; and when Dr. Ferrier began his experiments he was ignorant of their observations, and discovered the method independently. By the happy device of experimenting upon monkeys, whose brains present a great similarity in the arrangement of the convolutions to those of man, he was able to map out the most important *motor* areas with great precision; but not content with the investigation of motor centres, he experimented on the localization of *sensory* centres in the brain, and not only showed conclusively the existence of such centres, but determined their position. In addition to his work on cerebral localization he has shown, in conjunction with Dr. Yeo, that the complex, and at first sight seemingly purposeless connections of nerve fibres in certain plexuses is really connected with the co-ordination of various muscles for definite purposive movements. As so often happens, these researches, purely scientific in the first instance, have been turned to practical account. Dr. Ferrier himself predicted the application of cerebral localization to cerebral surgery. This application he and others have already made, and his prediction is now being fulfilled with brilliant results.

The other Royal Medal has been awarded to our Fellow, Dr. John Hopkinson, for his researches in magnetism and electricity.

Dr. Hopkinson's researches in magnetism comprise investigations of the effect of temperature upon the magnetic properties of iron, nickel, and various alloys of these metals (Phil. Trans., 1889, A, p. 443). Before these investigations were published it was thought that increased temperature tended to diminish the magnetic susceptibility of iron. Dr. Hopkinson's experiments show, however, that, on the contrary, the magnetic susceptibility increases enormously as the temperature increases, until the temperature reaches about 660° C.; beyond this temperature iron entirely ceases to be magnetic.

Dr. Hopkinson's contributions to the theory of dynamo-electric machinery are most important. The method, now so extensively used, of solving problems relating to dynamos by the use of what M. Deprez has called the "characteristic curve," is due to him.

He has also made a series of determinations of the specific inductive capacities and refractive indices of a large number of transparent dielectrics, the results of which are of great importance in the theories of electricity and light.

The Davy Medal has been awarded to Prof. Emil Fischer for his discoveries in organic chemistry, and especially for his researches on the carbo-hydrates.

To him, in conjunction with Otto Fischer, we owe the determination of the constitution of rosaniline, a most valuable dye-stuff, and the typical member of a very large group of important dyes.

He is the discoverer of phenylhydrazine, one of the most important of the reagents placed at chemists' disposal within recent years, and he has most exhaustively studied the behaviour of this substance and its congeners. The hydrazines have also been employed by Fischer in preparing indole derivatives, among others, skatole, and the study of a class of substances of considerable physiological importance has thereby been rendered possible.

During the past seven years Fischer has devoted his attention to the study of the sugars, and has obtained most marvellous results, having succeeded in preparing, by purely artificial methods, the known sugars dextrose and levulose, as well as other isomeric sugars, and having established the relationship of the various members of the glucose group. He has, in addition, determined the constitution of milk-sugar and of starch-sugar—the isomer of cane-sugar formed on hydrolysing starch. He has also prepared "glucoses" containing seven, eight, and nine atoms of carbon, and has established the remarkable fact that only those which contain three, six, or nine atoms of carbon are fermentable by yeast. His researches are not only of the highest value to chemists, but also of extreme importance to physiologists, on account of the insight which they afford of the processes concerned in the natural formation of sugars.

The Darwin Medal has been awarded to Mr. Alfred Russel Wallace for his independent origination of the theory of the origin of species by natural selection.

It was natural that this, the first award of the Darwin Medal, should have been made to one who independently originated the theory, since named that of natural selection, which, in conjunction with his other numerous and important contributions in the domain of natural history, have made the name of Darwin so famous, and who made known a large series of important and novel observations in support of that theory, the result of many years work in the Malay Archipelago. These views Mr. Wallace has subsequently most ably advocated in various published works, among others his laborious volumes on the "Geographical Distribution of Animals," his brilliant "Island Life," and more recently his "Darwinism," which was published only last year.